## REMARKS

Claims 1-25, 27 and 28 are currently pending. All of these claims were rejected in a Final

Office Action dated July 20, 2009. In the instant response to the Final Office Action, Claims 1, 8,

12, 24, 25 and 27 are amended. No claims are canceled, and no claims are added. No new matter is

added by way of amendment. After entry of the instant response, Claims 1-25, 27 and 28 will be

pending.

### Claim Rejections - 35 U.S.C. § 103

Claims 8-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu et al.,

U.S. Patent No. 6,370,620 B1 (hereinafter "Wu"), in view of Scharber, U.S. Patent No. 6,542,964

B1 (hereinafter "Scharber") and Lamburt et al., U.S. Patent No. 6,374,241 B1 (hereinafter

"Lamburt"). Applicant's representative respectfully traverses the rejections.

Nevertheless, to further clarify and distinguish the claimed invention over the proposed

combination of the cited prior art, Claims 1, 8, 12, 24, 25, and 27 are amended herein. For example,

as amended Claim 8 at least recites:

> if the frequency of requests for the plurality of different static content in the content
> set exceeds a threshold that is particular to the content set, forwarding the request for the
> static content over the network to a first cache that employs a hot list for access to static
> content that is separately cached

Support for these amendments can be found throughout the application as originally filed, including

on page 15, lines 4-20, and page 20, lines 6-14.

Claim 8 is further amended herein to clarify certain elements. Amended Claim 8 further

recites:

> and wherein the static content is obtained when unavailable in the first cache by actions,
> including:
> > (i)     generating a second request for the static content; and
> > (ii)    forwarding the second request over the network to a second cache
> determined by hashing an identifier associated with the static content if the frequency of
> requests for the plurality of different static content in the content set is below the threshold.

Support for this amendment can be found throughout the application as originally filed, including

page 13, lines 3-9, and page 19, lines 6-8.

9

The proposed combination of the cited prior art fails to suggest forwarding the request for the static content over the network to a first cache, if the frequency of requests for the plurality of different static content in the content set exceeds a threshold that is particular to the content set, as recited by amended Claim 8. Although Wu discusses a front-end router deciding to service requests for an object "when the reference count for a given . . . object exceeds a threshold" (Wu, col. 6, lines 54-67), Wu does not suggest that this threshold is **particular to the content set** that includes the static content being requested, such as the threshold of amended Claim 8. Moreover, it should be noted that although Wu elsewhere discusses "another threshold", this other threshold refers to a separation between partitions in memory (e.g., "between the local stack 101 and the regular stack 102", Wu, col. 7, line 58 to col. 8, line 13), and should not be read to suggest the claimed threshold for frequency of requests that is particular to the content set, as recited by amended Claim 8.

Moreover, neither Scharber nor Lamburt suggests this element of amended Claim 8. Scharber may discuss a caching scheme (see, e.g., Scharber, col. 5, lines 53-67), but Scharber does not mention forwarding requests to a first cache if the frequency of requests exceeds a threshold that is particular to the content set as claimed. And although Lamburt discusses a "hot cache" (Lamburt, col. 27, lines 35-47), Lamburt's system does not forward requests to its "hot cache" based on a determination that the frequency of requests exceeds a threshold that is **particular to the content set**, as claimed.

Further, the proposed combination of the cited prior art also fails to suggest a first cache that employs a hot list for access to static content that is separately cached, as recited by amended Claim 8. As stated in the Final Office Action (page 3, last paragraph), Wu and Scharber fail to teach this claim element. Lamburt also fails to suggest this element of amended Claim 8. In particular, Lamburt fails to suggest that its "hot cache" employs a hot list, such as that recited in amended Claim 8. Although Lamburt states that its "hot cache may include the most recently used items" (Lamburt, col. 27, lines 35-47), Lamburt further states that instead of a list as claimed, "a double ended **queue structure** is used to store cached objects" (Lamburt, col. 27, lines 57-60, emphasis added).

Further, Applicant's representative respectfully disagrees with the Final Office Action's assertion that it is inherent that Lamburt's hot cache should contain a list, given the other types of

10

data structures that Lamburt could employ, such as vectors, stacks, hashes, trees, or the double-ended queue described in Lamburt. Although the implicit teachings of a reference may be considered when determining obviousness (see MPEP § 2144.01), one skilled in the art would not read Lamburt as implicitly teaching a hot cache containing a list, in particular because Lamburt discusses the use of a double-ended queue structure in its caching process (Lamburt, col. 27, lines 57-60). For at least these reasons, amended Claim 8 is not obvious in view of the proposed combination of Wu, Scharber and Lamburt. Accordingly, withdrawal of the rejection of Claim 8 under 35 U.S.C. § 103(a) is requested.

So far as Claims 9-10 depend from amended Claim 8, the arguments made herein with regard to amended Claim 8 apply as well to Claims 9-10. For at least these reasons, Claims 9-10 are also not obvious in view of the proposed combination of Wu, Scharber and Lamburt. Accordingly, withdrawal of the rejection of Claims 9-10 under 35 U.S.C. § 103(a) is requested.

Claims 12, 14-17, 19, 21 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu in view of Scharber and Lamburt, further in view of Banerjia et al., U.S. Patent Publication No. 2001/0049818 A1 (hereinafter "Banerjia") and Palanca et al., U.S. Patent No. 6,216,215 B1 (hereinafter "Palanca"). Applicant's representative respectfully traverses the rejections.

Because amended independent Claims 12 and 25 recite similar, albeit different, elements to those of amended Claim 8, the remarks made herein with regard to amended Claim 8 apply as well to amended Claims 12 and 25. Moreover, Banerjia and Palanca fail to suggest those elements of amended Claims 12 and 25 not suggested by Wu, Scharber and Lamburt. In particular, Banerjia fails to suggest the claimed hot cache that is based at least in part on the request for static content with a higher frequency greater than a lower frequency associated with a lower level cache and that exceeds a threshold that is particular to a content set that includes the requested content. Although Banerjia discusses a "hot threshold" and a "second threshold" (Banerji, ¶¶ 26, 40), Banerji does not appear to provide any teachings as to how its thresholds are determined, and does not suggest that either threshold is **particular to the content set** that includes the requested content as claimed. Moreover, although Banerji mentions that "two or more thresholds could be provided", these multiple partitions are used by Banerji's system "to create three or more separate partitions in the

11

code cache" (Banerji, ¶ 26) (i.e., to create memory partitions). Banerji does not suggest that these thresholds are particular to a content set such as the claimed threshold. Moreover, Palanca fails to suggest this claim element. For at least these reasons, amended Claims 12 and 25 are also not obvious in view of the proposed combination of Wu, Scharber, Lamburt, Banerjia and Palanca. Accordingly, withdrawal of the rejection of Claims 12 and 25 under 35 U.S.C. § 103(a) is requested.

So far as Claims 14-17, 19, and 21 depend from amended Claim 12, the remarks made herein with regard to amended Claim 12 apply as well to Claims 14-17, 19, and 21. Thus, it is submitted that Claims 14-17, 19, and 21 are also not obvious in view of the proposed combination of Wu Scharber, Lamburt, Banerjia and Palanca. Accordingly, withdrawal of the rejection of Claims 14-17, 19, and 21 under 35 U.S.C. § 103(a) is also requested.

Claims 1, 24 and 27-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Trout, U.S. Patent No. 5,566,349 (hereinafter "Trout") in view of Lamburt, Scharber, Banerjia and Jordan et al., U.S. Patent Publication No. 2002/0026560 A1 (hereinafter "Jordan"). Applicant's representative respectfully traverses the rejections.

Because amended independent Claim 1 recites similar, albeit different, elements to those of amended Claim 8, the remarks made herein with regard to amended Claim 8 apply as well to amended Claim 1. Further, as discussed herein, Banerjia fails to suggest those elements of the amended independent claims not suggested by Lamburt and Scharber. Moreover, Trout and Jordan also fail to suggest those elements of the amended independent claims not suggested by Lamburt and Scharber. In particular, Trout fails to suggest a threshold associated with the hot cache and particular to a content set that includes the requested content, as recited by amended Claim 1. Although Trout discusses storage of data in a relational database, including routines to retrieve dynamic and static data from a cache memory (Trout, col. 12, lines 1-30), Trout does not suggest forwarding requests for content employing a threshold that is particular to a content set that includes the requested content, as claimed. Moreover, although Jordon discusses monitoring the "forwarding frequency" to a cache server, and shifting requests to another cache server to balance the load (Jordon, ¶ 13), Jordon does not suggest that this shifting is based on a threshold particular to a content set that includes the requested content, such as the threshold recited by amended Claim 1.

12

Moreover, the proposed combination of the cited prior art fails to suggest the claimed hot cache of amended Claim 1. In particular, the "hot cache" discussed in Lamburt fails to suggest the hot cache recited by amended Claim 1. Lamburt's caching technique uses a "Least Recently Used" policy, such that the hot cache "may include the **most recently used** items and the cold cache the remaining items" (Lamburt, col. 27, lines 35-47, emphasis added). However, this does not suggest the hot cache of amended Claim 1, which recites a hierarchy of caches in which the higher level cache is associated with higher **frequency** of requests, not with the most recent requests. For example, as stated in the Applicant's specification, "Content may be hot, for example, if the frequency of requests for it during a time period exceed a certain threshold" (see Specification as filed, page 12, lines 24-25). Thus, in Lamburt's system an item may be placed in the hot cache if it is recently used even if it is requested only once, for example. But this is in contrast with the claimed invention of amended Claim 1, wherein content is considered hot when the frequency of requests for it exceeds the threshold, even if the content has not been recently requested. Further, as stated in the Final Office Action, Trout also fails to disclose a plurality of caches that includes at least one hot cache (see Final Office Action, page 11, last paragraph).

In addition, it is submitted that the introduction of Banerjia to modify the combination of Trout, Lamburt and Scharber changes the principle of operation of the art being modified, and is therefore improper under MPEP § 2143.01(VI). With regard to the rejection of Claim 1, the Final Office Action states that the combination of Trout, Lamburt and Scharber fails to teach the claimed wherein a higher level cache in the hierarchy is associated with a higher frequency of requests for static content than a lower frequency of requests for static content associated with a lower level cache, and the Final Office Action proposes combining Banerjia with the other references to account for this element (see Final Office Action, page 14). However, Banerjia employs a different mechanism for caching than that employed by Lamburt. Specifically, Banerjia discusses a code cache that obtains "canonical information about which translations are executed the **most frequently**" (Banerjia, ¶ 26), as opposed to Lamburt's system for caching the **most recently used** items (Lamburt, col. 27, lines 35-47, emphasis added). Thus, combining Banerjia's caching mechanism with Trout, Lamburt and Scharber changes the principle of operation of the modified art

13

with regard to its caching mechanism, and therefore does not render amended Claim 1 *prima facie* obvious.

Finally with regard to amended Claim 1, the proposed combination of cited prior art fails to suggest recursively forwarding requests, generated from different caches in the hierarchy based on the received request and receipt of one of the recursively forwarded requests at each of the different caches in the hierarchy, as recited by amended Claim 1. In particular, Jordan fails to suggest this claim element. Although Jordan may discuss "shifting one or more subsequent forwarded requests for the cached object from the owning cache server to one or more of the cooperating cache servers" in response to a load condition (Jordan, ¶ 13), Jordan does not disclose or even suggest that this shifting is **recursive**, as recited in amended Claim 1. Instead, Jordan's shifting appears to be a **non-recursive** response to a load condition. This non-recursive behavior of Jordan's system is clearly shown by the flow diagram of Jordan's Figure 3, which shows a single determination that an owner cache is overloaded (Jordan, Fig. 3, element 204) followed by a forwarding of the request to a new "owner" (Jordan, Fig. 3, element 206), and does not show any sort of recursive process (e.g., a loop in the process). Thus, Jordan fails to suggest recursively forwarded requests as claimed. Moreover, as stated in the Final Office Action, the combination of Trout, Lamburt, Scharber and Banerjia also fails to disclose this element of amended Claim 1. For at least these reasons, amended Claim 1 is not obvious in view of the proposed combination of Trout, Lamburt, Scharber, Banerjia, and Jordan. Accordingly, withdrawal of the rejection of Claim 1 under 35 U.S.C. § 103(a) is requested.

Because amended independent Claims 24 and 27 recite similar, albeit different, elements to those of amended Claim 1, the remarks made herein with regard to amended Claim 1 apply as well to amended Claims 24 and 27. For at least these reasons, amended Claims 24 and 27 are also not obvious in view of the proposed combination of Trout, Lamburt, Scharber, Banerjia, and Jordan. Accordingly, withdrawal of the rejection of Claims 24 and 27 under 35 U.S.C. § 103(a) is requested.

So far as Claim 28 depends from amended Claim 27, the remarks made with regard to amended Claim 27 apply as well to Claim 28. Thus, it is submitted that Claim 28 is also not obvious in view of the proposed combination of Lamburt, Scharber, Banerjia, Jordan and Trout. Accordingly, withdrawal of the rejection of Claim 28 under 35 U.S.C. § 103(a) is requested.

Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Trout, Lamburt, Scharber, Banerjia and Jordan, further in view of Factor et al., U.S. Patent No. 6,094,706 (hereinafter "Factor"). Applicant's representative respectfully traverses the rejection. So far as Claim 2 depends from amended Claim 1, the remarks made herein with regard to amended Claim 1 apply as well to Claim 2. Moreover, Factor fails to suggest those elements of amended Claim 1 not suggested by Trout, Lamburt, Scharber, Banerjia and Jordan. In particular, Factor fails to suggest a threshold associated with the hot cache and particular to a content set that includes the requested content, as claimed in Claim 2 through its dependence from amended Claim 1. Although Factor may discuss adding pathnames containing a component to a cache once the component has been accessed "more than a threshold number of time" and that the threshold "can be set as a configuration parameter" (Factor, col. 11, lines 50-57), Factor fails to suggest that its threshold is particular to the content set that includes the requested content as claimed. For at least these reasons, Claim 2 is not obvious in view of the proposed combination of Trout, Lamburt, Scharber, Banerjia, Jordan, and Factor. Accordingly, withdrawal of the rejection of Claim 2 under 35 U.S.C. § 103(a) is requested.

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Trout, Lamburt, Scharber, Banerjia and Jordan, further in view of Guenthner et al., U.S. Patent No. 5,590,301 (hereinafter "Guenthner"). Applicant's representative respectfully traverses the rejection. So far as Claim 3 depends from amended Claim 1, the remarks made herein with regard to amended Claim 1 apply as well to Claim 3. Moreover, Guenthner fails to suggest those elements of amended Claim 1 not suggested by Trout, Lamburt, Scharber, Banerjia and Jordan. For at least these reasons, Claim 3 is not obvious in view of the proposed combination of Trout, Lamburt, Scharber, Banerjia, Jordan, and Guenthner. Accordingly, withdrawal of the rejection of Claim 3 under 35 U.S.C. § 103(a) is requested.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Trout, Lamburt, Scharber, Banerjia and Jordan, further in view of McCanne, U.S. Patent No. 6,785,704 B1 (hereinafter "McCanne"). Applicant's representative respectfully traverses the rejection. So far as Claim 4 depends from amended Claim 1, the remarks made herein with regard to amended Claim 1 apply as well to Claim 4. Moreover, McCanne fails to suggest those elements of amended Claim 1

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not suggested by Trout, Lamburt, Scharber, Banerjia and Jordan. For at least these reasons, Claim 4 is not obvious in view of the proposed combination of Trout, Lamburt, Scharber, Banerjia, Jordan, and McCanne. Accordingly, withdrawal of the rejection of Claim 4 under 35 U.S.C. § 103(a) is requested.

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Trout, Lamburt, Scharber, Banerjia and Jordan, further in view of Kimura et al., U.S. Patent No. 6,415,359 B1 (hereinafter "Kimura"). Applicant's representative respectfully traverses the rejection. So far as Claim 5 depends from amended Claim 1, the remarks made herein with regard to amended Claim 1 apply as well to Claim 5. Moreover, Kimura fails to suggest those elements of amended Claim 1 not suggested by Trout, Lamburt, Scharber, Banerjia and Jordan. For at least these reasons, Claim 5 is not obvious in view of the proposed combination of Trout, Lamburt, Scharber, Banerjia, Jordan, and Kimura. Accordingly, withdrawal of the rejection of Claim 5 under 35 U.S.C. § 103(a) is requested.

Claims 6-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Trout, Lamburt, Scharber, Banerjia and Jordan, further in view of Dujari, U.S. Patent No. 6,233,606 B1 (hereinafter "Dujari"). Applicant's representative respectfully traverses the rejections. So far as Claims 6-7 depend from amended Claim 1, the remarks made herein with regard to amended Claim 1 apply as well to Claims 6-7. Moreover, Dujari fails to suggest those elements of amended Claim 1 not suggested by Trout, Lamburt, Scharber, Banerjia and Jordan. For at least these reasons, Claims 6-7 are not obvious in view of the proposed combination of Trout, Lamburt, Scharber, Banerjia, Jordan, and Dujari. Accordingly, withdrawal of the rejection of Claims 6-7 under 35 U.S.C. § 103(a) is requested.

Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu, Scharber and Lamburt, in view of Cohen et al., U.S. Patent No. 6,330,561 B1 (hereinafter "Cohen"). Applicant's representative respectfully traverses the rejection. So far as Claim 11 depends from amended Claim 8, the remarks made herein with regard to amended Claim 8 apply as well to Claim 11. Moreover, Cohen fails to suggest those elements of amended Claim 8 not suggested by Wu, Scharber, and Lamburt. For at least these reasons, Claim 11 is not obvious in view of the proposed

16

combination of Wu, Scharber, Lamburt and Cohen. Accordingly, withdrawal of the rejection of Claim 11 under 35 U.S.C. § 103(a) is requested.

Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu, Scharber, Lamburt, Banerjia and Palanca, in view of Cohen and Sharma, U.S. Patent No. 6,591,341 B1 (hereinafter "Sharma"). Applicant's representative respectfully traverses the rejection. So far as Claim 13 depends from amended Claim 12, the remarks made herein with regard to amended Claim 12 apply as well to Claim 13. Moreover, Cohen and Sharma fail to suggest those elements of amended Claim 12 not suggested by Wu, Scharber, Lamburt, Banerjia and Palanca. For at least these reasons, Claim 13 is not obvious in view of the proposed combination of Wu, Scharber, Lamburt, Banerjia, Palanca, Cohen and Sharma. Accordingly, withdrawal of the rejection of Claim 13 under 35 U.S.C. § 103(a) is requested.

Claim 18 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu, Scharber, Lamburt, Banerjia and Palanca, in view of Factor. Applicant's representative respectfully traverses the rejection. So far as Claim 18 depends from amended Claim 12, the remarks made herein with regard to amended Claim 12 apply as well to Claim 18. Moreover, Factor fails to suggest those elements of amended Claim 12 not suggested by Wu, Scharber, Lamburt, Banerjia and Palanca. For at least these reasons, Claim 18 is not obvious in view of the proposed combination of Wu, Scharber, Lamburt, Banerjia, Palanca, and Factor. Accordingly, withdrawal of the rejection of Claim 18 under 35 U.S.C. § 103(a) is requested.

Claim 20 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu, Scharber, Lamburt, Banerjia and Palanca, in view of Sharma. Applicant's representative respectfully traverses the rejection. So far as Claim 20 depends from amended Claim 12, the remarks made herein with regard to amended Claim 12 apply as well to Claim 20. Moreover, Sharma fails to suggest those elements of amended Claim 12 not suggested by Wu, Scharber, Lamburt, Banerjia and Palanca. For at least these reasons, Claim 20 is not obvious in view of the proposed combination of Wu, Scharber, Lamburt, Banerjia, Palanca, and Sharma. Accordingly, withdrawal of the rejection of Claim 20 under 35 U.S.C. § 103(a) is requested.

Claims 22-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu, Scharber, Lamburt, Banerjia and Palanca, in view of Dujari. Applicant's representative respectfully

17

traverses the rejections. So far as Claims 22-23 depend from amended Claim 12, the remarks made herein with regard to amended Claim 12 apply as well to Claims 22-23. Moreover, Dujari fails to suggest those elements of amended Claim 12 not suggested by Wu, Scharber, Lamburt, Banerjia and Palanca, and Dujari. For at least these reasons, Claims 22-23 are not obvious in view of the proposed combination of Wu, Scharber, Lamburt, Banerjia, Palanca, and Dujari. Accordingly, withdrawal of the rejection of Claims 22-23 under 35 U.S.C. § 103(a) is requested.

**Conclusion**

In view of the above amendment, Applicant's representative believes the pending application is in condition for allowance.

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Respectfully submitted,

By _/Scott M. Tobias/_____
Scott M. Tobias
    Registration No.: 62,808
DARBY & DARBY P.C.
P.O. Box 770
Church Street Station
New York, New York 10008-0770
(206) 262-8922
(212) 527-7701 (Fax)
Attorneys/Agents For Applicant

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